

**I CLAIM:**

1. A luminaire system for generating white light with a desired correlated colour temperature, the luminaire system comprising:
  - a) a light module including:
    - 5 i) one or more white light-emitting elements for generating white light having a particular correlated colour temperature;
    - ii) one or more first colour light-emitting elements for generating light of a first colour;
    - 10 iii) one or more second colour light-emitting elements for generating light of a second colour;
  - b) a feedback system for collecting operational temperature information regarding the light module;
  - c) a drive and control system for receiving said temperature information, and controlling the supply of power to each of the one or more white  
15 light-emitting elements, the one or more first colour light-emitting elements, and the one or more second colour light-emitting elements based on the temperature information and the desired correlated colour temperature; and
  - d) an optical system for extracting and mixing the light generated by the  
20 light module thereby creating an output beam having the desired correlated colour temperature.
2. The luminaire system according to claim 1, wherein the feedback system further  
25 comprises one or more optical sensors for collecting optical information relating to light generated by the light module, wherein a drive and control system receives said optical information and further controls the supply of power to each of the one or more white light-emitting elements, the one or more first colour light-emitting elements, and the one or more second colour light-emitting elements based on the optical information.
- 30 3. The luminaire system according to claim 2 wherein the light module further comprises one or more third colour light-emitting elements for generating light of a third colour.

4. The luminaire system according to claim 2, wherein the first colour light-emitting elements generate green light.
- 5 5. The luminaire system according to claim 4, wherein the second colour light-emitting elements generate blue or red light.
6. The luminaire system according to claim 3, wherein the first colour light-emitting elements generate green light, the second colour light-emitting elements generate blue light and the third colour light-emitting elements generate red light.
- 10 7. The luminaire system according to claim 2, wherein the white light-emitting elements, first colour light-emitting elements and the second colour light-emitting elements are manufactured using a similar material technology.
- 15 8. The luminaire system according to claim 7, wherein the similar material technology is based on indium gallium nitride.
- 20 9. A method for generating mixed white light having a desired correlated colour temperature, the method comprising:
  - a) generating white light having a particular correlated colour temperature by one or more white light-emitting elements;
  - b) generating and mixing in a predetermined portion of light generated by one or more first colour light-emitting elements; and
  - 25 c) generating and mixing in a predetermined portion of light generated by one or more second colour light-emitting elements;thereby generating mixed white light having the desired correlated colour temperature.
- 30 10. The method according to claim 9, further comprising the step of generating and mixing in light generated by one or more third colour light-emitting elements.
11. The method according to claim 9, further comprising the step of detecting an operational temperature of the one or more white light-emitting elements, one or

more first colour light-emitting elements and one or more second colour light-emitting elements and adjusting operation of the one or more first colour light-emitting elements and one or more second colour light-emitting elements in response to the detected operational temperature.

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12. The method according to claim 9, further comprising the step of detecting optical characteristics of the mixed white light and adjusting operation of the one or more first colour light-emitting elements and one or more second colour light-emitting elements in response to the detected optical characteristics.

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13. The method according to claim 9, wherein the first colour light-emitting elements generate green light.

14. The method according to claim 13, wherein the second colour light-emitting elements generate blue or red light.

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15. The method according to claim 9, wherein the first colour light-emitting elements generate green light, the second colour light-emitting elements generate blue light and the third colour light-emitting elements generate red light.

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16. The method according to claim 9, wherein the white light-emitting elements, first colour light-emitting elements and the second colour light-emitting elements are manufactured using a similar material technology.

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17. The method according to claim 16, wherein the similar material technology is based on indium gallium nitride.